

# Wing-Kai Hon

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## Education Background

- Ph.D. (CS)     The University of Hong Kong (2000–2005)  
M.Phil. (CS)   The University of Hong Kong (1997–2000)  
B.Sc. (CS)     The University of Hong Kong (1994–1997) with first class honors

## Experience

- Assistant Professor             National Tsing Hua University (2006–now)  
Visiting Assistant Professor     Purdue University (2004–2006)  
Postgraduate Intern             National University of Singapore (2002–2003)

## Journal Publications

1. E. Lo, C. Binning, D. Kossmann, M. T. Ozsü, and W. K. Hon. *A Framework for Testing DBMS Features*. To appear in **VLDB Journal**.
2. J. C. Chin, Y. Dong, W. K. Hon, C. Y. T. Ma, and D. K. Y. Yau. *Detection of Intelligent Mobile Target in a Mobile Sensor Network*. To appear in **IEEE/ACM Transactions on Networking**.
3. W. K. Hon, K. Sadakane, and W. K. Sung. *Breaking a Time-and-Space Barrier in Constructing Full-Text Indices*. **SIAM Journal on Computing**, volume 38(6), 2162–2178, 2009.
4. Y. Dong, W. K. Hon, D. K. Y. Yau, and J. C. Chin. *Distance Reduction in Mobile Wireless Communication: Lower Bound Analysis and Practical Attainment*. **IEEE Transactions on Mobile Computing**, volume 8(2), 276–287, 2009.
5. H. L. Chan, W. K. Hon, T. W. Lam, and K. Sadakane. *Compressed Indexes for Dynamic Text Collections*. **ACM Transactions on Algorithms**, volume 3(2), 2007.
6. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Data Structures: Dictionaries and Data-Aware Measures*. **Theoretical Computer Science**, volume 387(3), 313–331, 2007.
7. W. K. Hon, T. W. Lam, K. Sadakane, W. K. Sung, and S. M. Yiu. *A Space and Time Efficient Algorithm for Constructing Compressed Suffix Arrays*. **Algorithmica**, volume 48(1), 28–36, 2007.
8. T. N. D. Huynh, W. K. Hon, T. W. Lam, and W. K. Sung. *Approximate String Matching Using Compressed Suffix Arrays*. **Theoretical Computer Science**, volume 352(1–3), 240–249, 2006.
9. W. K. Hon, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. *Non-shared Edges and Nearest Neighbor Interchange Revisited*. **Information Processing Letters**, volume 91(3), 129–134, 2004.

10. W. K. Hon, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. *Subtree Transfer Distance for Degree-D Phylogenies*. **International Journal of Foundations of Computer Science**, volume 15(6), 893–909, 2004.
11. W. K. Hon and T. W. Lam. *Approximating the Nearest Neighbor Interchange Distance for Non-Uniform-Degree Evolutionary Trees*. **International Journal of Foundations of Computer Science**, volume 12(4), 533–550, 2001.

### Conference Publications

1. S. Y. Chiu, W. K. Hon, R. Shah, and J. S. Vitter. *I/O-efficient Compressed Text Indexes: From Theory to Practice*. To appear in **IEEE Data Compression Conference (DCC)**, 2010.
2. W. K. Hon, W. Wu, and T. S. Yang. *Compressed Indexes for Approximate Library Management (poster)*. To appear in **IEEE Data Compression Conference (DCC)**, 2010.
3. F. Law, P. F. Chan, S. M. Yiu, B. Tang, P. Lai, K. P. Chow, R. Ieong, M. Kwan, W. K. Hon, and L. Hui. *Identifying Static and Dynamic Volatile Memory Data from Multiple Dumps for Live Forensics*. To appear in **IFIP International Conference on Digital Forensics**, 2010.
4. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Succinct Index for Dynamic Dictionary Matching*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 1034–1043, 2009.
5. Y. S. Su, W. K. Hon, C. C. Yang, S. C. Chang, Y. J. Chang, and Y. C. Kao. *Value Assignment of Adjustable Delay Buffers for Clock Skew Minimization in Multi-Voltage Mode Designs*. To appear in **IEEE/ACM International Conference on Computer Aided Design (ICCAD)**, 2009.
6. W. K. Hon, R. Shah, and J. S. Vitter. *Space-Efficient Framework for Top-k String Retrieval Problems*. To appear in **IEEE Symposium on Foundations of Computer Science (FOCS)**, 2009.
7. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *On Entropy-Compressed Text Indexing in External Memory*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 75–89, 2009.
8. W. K. Hon, R. Shah, and S. B. Wu. *Efficient Index for Retrieving Top-k Most Frequent Documents*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 182–193, 2009.
9. C. C. Yu, W. K. Hon, and B. F. Wang. *Efficient Data Structures for Orthogonal Range Successor Problem*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 96–105, 2009.
10. W. K. Hon, R. Shah, P. Varman, and J. S. Vitter. *Tight Competitive Ratios for Parallel Disk Prefetching and Caching*, in **ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)**, pages 352–361, 2008.

11. Y. F. Chien, W. K. Hon, R. Shah, and J. S. Vitter. *Geometric Burrows-Wheeler Transform: Linking Range Searching and Text Indexing*, in **IEEE Data Compression Conference (DCC)**, pages 252–261, 2008.
12. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Compressed Index for Dictionary Matching*, in **IEEE Data Compression Conference (DCC)**, pages 23–32, 2008.
13. M. Eltabakh, W. K. Hon, R. Shah, W. G. Aref, and J. S. Vitter. *The SBC-Tree: An Index for Run-Length Compressed Sequences*, in **International Conference on Extending Database Technology (EDBT)**, pages 523–534, 2008.
14. J. C. Chin, Y. Dong, W. K. Hon, and D. K. Y. Yau. *On Intelligent Mobile Target Detection in a Mobile Sensor Network*, in **IEEE International Conference on Mobile Adhoc and Sensor Systems (MASS)**, pages 1–9, 2007.
15. Y. Dong, W. K. Hon, D. K. Y. Yau, and J. C. Chin. *Distance Reduction in Mobile Wireless Communication: Lower Bound Analysis and Practical Attainment*, in **ACM-IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)**, pages 23–30, 2007.
16. Y. Dong, W. K. Hon, and D. K. Y. Yau. *On Area of Interest Coverage in Surveillance Mobile Sensor Networks (short paper)*, in **IEEE International Workshop on Quality of Service (IWQoS)**, pages 87–90, 2007.
17. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Cache-Oblivious Index for Approximate String Matching*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 40–51, 2007.
18. C. Y. Chan, H. I. Yu, W. K. Hon, and B. F. Wang. *A Fast Query Algorithm for the Text Fingerprinting Problem*, in **European Symposium on Algorithms (ESA)**, pages 123–135, 2007.
19. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *A Framework for Dynamizing Succinct Data Structures*, in **International Colloquium on Automata, Languages, and Programming (ICALP)**, pages 521–532, 2007.
20. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Dictionaries: Space Measures, Data Sets, and Experiments*, in **International Workshop on Experimental Algorithms (WEA)**, pages 158–169, 2006.
21. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Data Structures: Dictionaries and Data-Aware Measures*, in **IEEE Data Compression Conference (DCC)**, pages 213–222, 2006.
22. H. L. Chan, W. K. Hon, T. W. Lam, and K. Sadakane. *Dynamic Dictionary Matching and Compressed Suffix Trees*, in **ACM-SIAM Symposium on Discrete Algorithms (SODA)**, pages 13–22, 2005.
23. T. N. D. Huynh, W. K. Hon, T. W. Lam, and W. K. Sung. *Approximate String Matching using Compressed Suffix Arrays*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages

- 434–444, 2004.
24. H. L. Chan, W. K. Hon, and T. W. Lam. *Compressed Index for Dynamic Collection of Texts*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 445–456, 2004.
  25. W. K. Hon, T. W. Lam, K. Sadakane, W. K. Sung, and S. M. Yiu. *Compressed Index for Dynamic Text*, in **IEEE Data Compression Conference (DCC)**, pages 102–111, 2004.
  26. W. K. Hon, T. W. Lam, W. K. Sung, W. L. Tse, C. K. Wong, and S. M. Yiu. *Practical Aspects of Compressed Suffix Arrays and FM-index in Searching DNA Sequences*, in **Workshop on Algorithm Engineering and Experimentations (ALENEX)**, pages 31–38, 2004.
  27. W. K. Hon, K. Sadakane, and W. K. Sung. *Breaking a Time-and-Space Barrier in Constructing Full-Text Indices*, in **IEEE Symposium on Foundations of Computer Science (FOCS)**, pages 251–260, 2003.
  28. W. K. Hon, T. W. Lam, K. Sadakane, and W. K. Sung. *Constructing Compressed Suffix Arrays with Large Alphabets*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 240–249, 2003.
  29. W. K. Hon, K. Sadakane, and W. K. Sung. *Succinct Data Structures for Searchable Partial Sums*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 505–516, 2003.
  30. W. Fu, W. K. Hon, and W. K. Sung. *On All-Substrings Alignment Problems*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 80–89, 2003.
  31. W. K. Hon and K. Sadakane. *Space-Economical Algorithms for Finding Maximal Unique Matches*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 144–152, 2002.
  32. W. K. Hon, M. Y. Kao, and T. W. Lam. *Improved Phylogeny Comparison: Non-shared Edges, Nearest Neighbor Interchanges, and Subtree Transfer*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 527–538, 2000.
  33. W. K. Hon and T. W. Lam. *Approximating the Nearest Neighbor Interchange Distance for Evolutionary Trees with Non-Uniform Degrees*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 61–70, 1999.

## Book Chapters

1. W. K. Hon. *Non-Shared Edges*. **Encyclopedia of Algorithms (Editor: M. Y. Kao)**, 2008.

## Research Funding

1. 2007/08–2010/07.  
*Novel Techniques for Text Indexing and Their Applications*.  
**National Science Council Grant 96-2221-E-007-082**, Taiwan, NTD\$1,575,000.

## Theses Supervision

Master Thesis (at National Tsing Hua University, Taiwan)

**2008.** Yu-Feng Chien.

*Physical Zero-Knowledge Proof for Nonogram Puzzles.*

**2009.** Fu-Home Liu.

*An Efficient Algorithm for Answering Top-k Typical Range Representatives Query.*

**2009.** Hsiang-Hsuan Liu.

*A Survey on the Set Union-Find Problem.*

**2009.** Bo-Ru Wu.

*Compressed Index for Approximate String Matching: From Theory to Practice.*

**2009.** Shih-Bin Wu.

*Efficient Index for Retrieving Top-k Most Frequent Documents and Its Construction.*

**2009.** Ting-Shuo Yang.

*Dynamic Compressed Index for Approximate String Matching.*

## Research Interests

String Matching ◊ Indexing ◊ Compression ◊ External-Memory ◊ Combinatorial Optimization

## Teaching Areas

Discrete Math ◊ Algorithms ◊ Data Structures ◊ Theory of Computing ◊ Randomized Algo

## Professional Activities

Reviewer of various international journals and conferences, including

Journals in Algorithms: TALG ◊ TCS ◊ Algorithmica ◊ IPL ◊ IP&M ◊ IJFCS ◊ JEA ◊ JISE

Journals in Other Areas: VLDBJ ◊ TON ◊ TKDE ◊ TC

Conferences: SODA'07, SODA'08, COCOON'08, DCC'10

## Additional Information (Academic Visits, Invited Talks)

**2008.** Polytechnic University, Hong Kong (Jul–Aug), Host: Eric Lo.

**2008.** International PhD Student Workshop on SOC (IPS'08), Kenting, Taiwan (Aug).

**2009.** Louisiana State University, USA (Jan–Feb, Jul–Aug), Host: Rahul Shah.

**2010.** University of Hong Kong, Hong Kong (Jan), Host: Tak-Wah Lam.

**2010.** Chinese University of Hong Kong, Hong Kong (Jan 11), Host: ITCSC.

## References (in alphabetical order)

1. Prof. Tak-Wah Lam (PhD advisor)  
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Professor, Department of Computer Science,  
The University of Hong Kong, Hong Kong.
2. Dr. Kunihiro Sadakane (Collaborator)  
Email: sada@nii.ac.jp  
Associate Professor, Principles of Informatics Research Division,  
National Institute of Informatics, Japan.
3. Dr. Rahul Shah (Collaborator)  
Email: rahul@csc.lsu.edu  
Assistant Professor, Department of Computer Science,  
Louisiana State University, Louisiana, USA.
4. Dr. Wing-Kin Sung (Intern supervisor)  
Email: ksung@comp.nus.edu.sg  
Associate Professor, School of Computing,  
National University of Singapore, Singapore.
5. Prof. Jeffrey Scott Vitter (Post-doc supervisor)  
Email: jsv@tamu.edu  
Professor, Department of Computer Science,  
Texas A&M University, Texas, USA.
6. Dr. David K. Y. Yau (Collaborator)  
Email: yau@cs.purdue.edu  
Associate Professor, Department of Computer Sciences,  
Purdue University, West Lafayette, USA.